

**Amendments to the Claims:**

This listing of the claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) ~~A differential~~ An interferometric confocal microscope for measuring an object, said microscope comprising:

a source-side pinhole array;  
a detector-side pinhole array; and

an interferometer that images the array of pinholes of the source-side pinhole array onto a first array of spots located in front of an object plane located near where the object is positioned and onto a second array of spots behind the object plane, wherein the first and second arrays of spots are displaced relative to each other in a direction that is normal to the object plane, said interferometer also (1) imaging the first arrays of spots onto a first image plane that is behind the detector-side pinhole array, (2) imaging the first array of spots onto a second image plane, (3) imaging the second array of spots onto the second image plane, and (4) imaging the second array of spots onto a third image plane that is in front of the plane defined by the detector-side pinhole array,

wherein each spot of the imaged first array of spots in the first image plane is aligned with a corresponding different spot of the imaged second array of spots in the ~~second~~ third image plane and a corresponding different pinhole of the detector-side pinhole array, and

wherein each spot of the imaged first array of spots in the second image plane coincides with a corresponding different spot of the imaged second array of spots in the second image plane and is aligned with a corresponding different pinhole of the detector-side pinhole array.

2. (Currently Amended) ~~A differential~~ An interferometric confocal microscope for measuring an object, said microscope comprising:

a source-side pinhole array for producing an array of input beams; and

a detector-side pinhole array; and  
an interferometer including:  
a first optical element providing a first reflecting surface;  
a second optical element providing a second reflecting surface; and  
a beam splitter positioned between the first and second optical elements,  
wherein the beam splitter produces from the array of input beams a first array of measurement beams and a second array of measurement beams,  
wherein the first reflecting surface participates in focusing the first array of measurement beams onto a first array of locations on a first object plane in object space and the second reflecting surface participates in focusing the second array of measurement beams onto a second array of locations on a second object plane in object space, said first and second object planes being parallel to and displaced from each other,  
wherein the first array of measurement beams generates a first array of return beams from the object and the second array of measurement beams generates a second array of return beams from the object,  
wherein the first and second reflecting elements participate in producing from the first array of return beams (1) a first array of converging beams that converge to a first array of spots on a first image plane and (2) a second array of converging beams that converge onto a second array of spots on a second image plane,  
wherein the first and second reflecting elements participate in producing from the second array of return beams (1) a third array of converging beams that converge onto the second array of spots on the second image plane and (2) a fourth array of converging beams that converge onto a third array of spots on a third image plane,  
wherein said first and third image planes are adjacent to and on opposite sides of the detector-side pinhole array, and the second image plane lies between the first and third image planes, and  
wherein the detector-side pinhole array combines the first, second, third, and fourth arrays of converging beams to form an array of output beams.

3. (Currently Amended) The ~~differential~~ interferometric confocal microscope of claim 2 wherein a single pinhole array serves as both the source-side pinhole array and the detector-side pinhole array.

4. (Currently Amended) The ~~differential~~ interferometric confocal microscope of claim 3, wherein the first optical element is located between said single pinhole array and the beam splitter and wherein the second optical element is located between a location at which the object is positioned during use and the beam splitter, wherein the first reflecting surface has a center of curvature for which there is a corresponding conjugate as viewed through the beam splitter, and wherein the second reflecting surface has a center of curvature that is displaced relative to the corresponding conjugate of the center of curvature of the first reflecting surface.

5. (Currently Amended) The ~~differential~~ interferometric confocal microscope of claim 4, wherein the conjugate of the center of curvature of the first reflecting surface and the center of curvature of the second reflecting surface are displaced from each other in a direction that is normal to a plane defined by the beam splitter.

6. (Currently Amended) The ~~differential~~ interferometric confocal microscope of claim 5, wherein the first reflecting surface participates in focusing the first array of measurement beams via the beam splitter onto the first array of locations and the second reflecting surface participates in focusing the second array of measurement beams via the beam splitter onto the second array of locations.

7. (Currently Amended) The ~~differential~~ interferometric confocal microscope of claim 6 wherein the first reflecting surface is substantially concentric with a point on the object.

8. (Currently Amended) The ~~differential~~ interferometric confocal microscope of claim 7 [[8]], wherein the second optical element provides a refracting surface positioned between the object and the beam splitter to receive light rays from the object.

9. (Currently Amended) The ~~differential~~ interferometric confocal microscope of claim 9, wherein the first reflecting surface substantially conforms to a sphere having a first radius and the refracting surface conforms to a sphere having a second radius, wherein the first radius is greater than the second radius.

10. (Currently Amended) The ~~differential~~ interferometric confocal microscope of claim 9, wherein the first optical element provides a refracting surface positioned between the beam splitter and said single pinhole array.

11. (Currently Amended) The ~~differential~~ interferometric confocal microscope of claim 10 wherein the second reflecting surface is substantially concentric with an image point on said single pinhole array.

12. (Currently Amended) The ~~differential~~ interferometric confocal microscope of claim 11, wherein the second reflecting surface substantially conforms to a sphere having a first radius and the refracting surface conforms to a sphere having a second radius, wherein the first radius is greater than the second radius.

13. (Currently Amended) The ~~differential~~ interferometric confocal microscope of claim 6, wherein said single pinhole array is a two-dimensional array.

14. (Currently Amended) The ~~differential~~ interferometric confocal microscope of claim 13, wherein the two-dimensional array is of equally-spaced holes.

15. (Currently Amended) The ~~differential~~ interferometric confocal microscope of claim 14, wherein the equally-spaced holes are circular apertures.

16. (New) The interferometric confocal microscope of claim 1 wherein the second image plane is between the first and third image planes.

17. (New) The interferometric confocal microscope of claim 1 wherein each spot of the imaged first array of spots in the second image plane is formed by a corresponding beam of a first array of beams and each spot of the imaged second array of spots in the second image plane is formed by a corresponding beam of a second array of beams and wherein the interferometer is configured so that for each spot of the imaged first array of spots, the beam forming that first spot in the second image plane is out of phase by  $\pi$  with the beam forming the corresponding spot of the imaged second array of spots in the second image plane.

18. (New) The interferometric confocal microscope of claim 1 wherein the interferometer is configured to operate in a dark field mode.

19. (New) The interferometric confocal microscope of claim 2 wherein the interferometer is configured so that for each spot of the first array of spots, the beam forming that spot in the second image plane is out of phase by  $\pi$  with the beam forming the corresponding spot of the second array of spots in the second image plane.

20. (New) The interferometric confocal microscope of claim 2 wherein the interferometer is configured to operate in a dark field mode.